Doctors at the University of Arizona Department of Surgery treated the first patient in a groundbreaking nationwide study using a viral gene therapy to treat glioblastoma multiform (GBM) brain tumors. **Allan J. Hamilton, MD**, head of the Department of Surgery at the UA College of Medicine, and his neurosurgery team injected trillions of non-replicating virus cells containing the beta interferon gene directly into the patient’s tumor. Then during a follow-up procedure, Dr. Hamilton surgically removed the tumor and injected more of the virus into the surrounding brain cavity.

The virus will deliver the gene to the tumor cells causing the cells to produce beta interferons. Interferons are naturally occurring proteins found in the human body that have been shown to be important anti-cancer agents because of their ability to stimulate the immune system.

Beta interferons act as “anti-angiogenic” agents, meaning they interfere with the tumor’s ability to recruit blood vessels, explains Dr. Hamilton. They also prohibit the cancer cells from dividing and signal the body’s own immune system to attack and kill the cancer cells.

Although containing trillions of cells, the amount of the virus injected into the tumor is smaller than a teardrop, says Dr. Hamilton. “You know the phrase ‘How many angels can fit on the head of a pin?’ Well, in this case, it’s about 3 trillion.”

Glioblastoma is the most common and most deadly malignant primary brain tumor. Each year, 8,000 people in the U.S. are diagnosed with glioblastoma, according to the American Brain Tumor Association. GBM is the third-leading cause of cancer-related deaths among individuals ages 15 to 34.

Currently, patients with primary brain tumors undergo three treatments: surgery, radiation therapy and chemotherapy. “One of the biggest roadblocks with current treatments is reaching and killing every last cancer cell,” says Dr. Hamilton.

Sponsored by Biogen, the Phase I clinical trial is specifically designed to evaluate the safety of this new gene therapy. Only five medical centers were selected to participate in the study. Dr. Hamilton, a world-renowned neurosurgeon specializing in brain and spinal cord tumors and member of the Arizona Cancer Center, leads the UA study.
Chairman’s Message

It is a pleasure to have the opportunity to introduce the Department of Surgery’s first newsletter. The creation of this newsletter is a reflection of the faculty members, who felt that we needed to share information about the academic accomplishments and developments in the Department.

Obviously, we take great pride in the quality of our patient care and in this and future issues hope to highlight medical breakthroughs and the state-of-the-art surgical procedures practiced at University Medical Center. As part of the University of Arizona College of Medicine, we will feature in our newsletter articles about our innovative educational programs to train surgeons for the 21st century, including our residency and clerkship programs, and the numerous fellowships offered throughout the Department. In addition, we will tell you about our research programs, which continue to grow as we add talented faculty dedicated to improving treatments and finding cures.

As the Department moves toward the future, we hope to take you with us as we follow a determined and bold plan to expand our faculty to accomplish our clinical, education and research missions. The first phase of this plan will take place during 2003, when five new surgeons will be added to the Department. And we will begin our first initiative at developing philanthropic support for the Department of Surgery.

We continue to enjoy a great working relationship with all of the Tucson community, including both our surgical and non-surgical colleagues. The most recent referenda in trauma and emergency care show to what extent the citizens of Tucson honor us and treasure us. We will do our best to prove that we are worthy of their commitment and praise.

Respectfully,

ALLAN J. HAMILTON, MD
Professor and Chairman
Department of Surgery

Cutting-Edge Research

New Procedure May Provide Possible Early Warning Signs of Breast Cancer

James A. Warneke, MD, UA associate professor of surgery, is collaborating with researchers at the Arizona Cancer Center in a pilot study using ductal lavage, an experimental technique of extracting milk-duct cells, that potentially could be used to identify risks for breast cancer.

More than 95 percent of all breast cancers start in the lining of the milk ducts, but it usually takes eight to 10 years before a routine mammogram or physical exam spots the problem. Researchers are hoping this new procedure can be used to detect pre-malignant and malignant breast cells long before they can become visible tumors.

Ductal lavage involves flushing the ducts to dislodge cells by injecting saline solution through the nipples and drawing it back out again, explains Dr. Warneke. Once collected, the cells are viewed under a microscope to determine whether they are normal, atypical, suspicious or malignant.

An advantage to ductal lavage is that it can be repeated in the exact same duct. That way, doctors can monitor high-risk women by looking for changes in those cells over time, Dr. Warneke says. “Ductal lavage has the potential to be a very valuable screening test for women.”

Cynthia A. Thomson, PhD, assistant professor of nutritional sciences at the Arizona Cancer Center and one of the study’s principal investigators, says that because ductal lavage may provide an opportunity to look for the very beginnings of abnormal changes, it can offer high-risk women unique, early information when used in conjunction with mammography and breast examination.

“This kind of information can help in making decisions about risk reduction and treatment options,” she says. “Treatment options might include anticancer drugs or nutritional changes.”

Each year more than 175,000 women in the United States are diagnosed with breast cancer and more than 43,000 will die of the disease. Thousands of lives could be saved each year if breast cancer could be detected in its earliest stages.

Dr. Jim Warneke points out on a mammogram how ductal lavage may potentially be used to identify risks for breast cancer.
Surgeons at University Medical Center are performing a new procedure to repair abdominal aortic aneurysms that drastically reduces a patient’s recovery time from approximately two months to two weeks.

To repair an abdominal aortic aneurysm, doctors traditionally had to cut open the entire abdomen to reach the blood vessel. Now, using a flexible synthetic graft, they can get to the aneurysm through two tiny incisions.

“When compared to the conventional surgical procedure, the new, minimally invasive endovascular repair of an abdominal aortic aneurysm offers a shorter hospital stay, a rapid return to normal physical activity and a reduction in mortality and complications,” explains Joseph L. Mills Sr., MD, professor and chief of the Section of Vascular Surgery.

An aortic aneurysm is the ballooning of the walls of the aorta, the major artery from the heart. It can rupture if left untreated, and less than 50 percent of all people with a ruptured abdominal aortic aneurysm survive.

Approximately 40,000 patients undergo elective repair of abdominal aortic aneurysm in the United States each year.

To repair an aneurysm, the traditional technique of open surgery requires a large incision be made in the patient’s abdomen. “The operation lasts from two to five hours,” Dr. Mills says. “Patients are in the hospital for five to 11 days and it takes two to three months before the patient is fully recovered. Open aneurysm surgery is a very major operation.”

The “endovascular” procedure involves inserting an expandable Y-shaped tube into the inside of the aneurysm through the femoral artery in the groin. Using the new technique, Dr. Mills is able to repair the aortic aneurysm through two small groin incisions. The graft is placed in position using very careful and accurate X-ray guidance and fixed in place above and below the aneurysm. The patient usually can return home in just two days.

Although endovascular repair of abdominal aortic aneurysms using a stent-graft is an important advance in modern surgery, it does not completely replace open surgery, says Dr. Mills.

“With open repair, the likelihood that we’ll ever have trouble with the aneurysm again is very low,” Dr. Mills says. “With endovascular repair, there is some possibility that over time the graft will shift, allowing the aneurysm to become active. For that reason, it is important that patients who have endovascular repair be followed with CT scans every six months.”

Dr. Mills says the procedure is ideal for patients who, because of their age or health status, are not candidates for the more traumatic surgery.

New procedure offers a shorter hospital stay, a rapid return to normal physical activity and a reduction in mortality and complications.
New Technology Nearly Guarantees Success in Removing Elusive Parathyroid Gland

University Medical Center is one of only a few hospitals nationwide to offer a new technology allowing surgeons to treat hyperparathyroidism with a minimally-invasive procedure that increases the chance for success to nearly 100 percent.

Smaller than peas, the four parathyroid glands in the neck play an important role in the human body. The parathyroid hormone (PTH) they produce acts directly on the kidneys and bone to regulate serum calcium levels, and indirectly on the gastrointestinal tract to enhance the intestinal absorption of calcium.

When one of these tiny glands becomes overactive due to a tumor and produces too much hormone, it can be a significant health risk for the patient and a challenge for the surgeon to remove, explains Michael Demeure, MD, professor and chief of the Division of General Surgery. The overproduction of PTH can cause weakening of the bones, kidney stones, muscle weakness, depression and stomach problems. About one in every 1,000 women and one in every 2,000 men have hyperparathyroidism, the most common cause of hypercalcemia (a high level of calcium in the bloodstream).

Standard treatment for primary hyperparathyroidism is to surgically remove the enlarged gland that is producing the hormone. Finding the culprit has been a challenge in the past because the location of the tiny parathyroids varies within the neck. The surgery involved general anesthesia, a 3-inch incision, and often one to two hours of surgery to find the enlarged gland. Patients usually stayed in the hospital for one or two days. “In some cases, the enlarged gland was not found,” Dr. Demeure says.

Now, the STAT-Intraoperative System makes it possible for Dr. Demeure and other endocrine surgeons to reduce surgery time and help ensure that the offending gland is found and removed.

Prior to surgery, the patient is given a weak radioactive substance. A hand-held gamma probe then is used to pinpoint the location of the parathyroid tumor. The surgeon makes a small incision and removes the gland. The STAT-Intraoperative-System monitors the parathyroid hormone concentration in the blood during surgery. The system serves as a “minilab”, allowing surgeons to perform the test in the operating room where the test result is needed. A rapid decrease of the parathyroid hormone level signifies that the gland removed was the culprit and no other parathyroid glands are diseased.

With only a 1-inch incision needed, the procedure now can be performed with the patient awake and under local anesthesia. The patient usually goes home the same day. “Using this technology avoids the need for more extensive neck exploration for the tumor,” says Dr. Demeure.

Innovative Education

Department Launches Rural Surgery Rotation

The UA Department of Surgery is teaming up with Tuba City Indian Medical Center to put young surgeons in the operating room of a rural hospital. The General Surgery Residency Program created the elective to help surgeons in training get hands-on experience while providing an under-served community with much-needed surgical support, says Hugo Villar, MD, associate head of the Department.

Third-year surgery resident, Roland Snure, MD, is the first from the General Surgery Residency Program to take part in the elective. His one-month rural rotation includes surgical work in several areas, including surgical oncology, head and neck, general surgery and urology.

“In a rural hospital, one doctor will handle all types of surgeries. Roland will gain a lot of experience as well as learn about Native American cultures and about practicing medicine in a small community,” Dr. Villar says.

Dr. Villar says the medical center’s four board certified surgeons enthusiastically endorse the program. Two of the surgeons, Michael Wilcox, MD, and Gregory Jarrin, MD, visited the Department in July and presented Grands Rounds on the medical issues of the Navajo Nation.
Residency Program Receives Reaccreditation

The General Surgery Residency Program recently received full reaccreditation for another four years after a site visit completed in March 2002 by the Surgery Resident Review Committee, operating under the American College of Graduate Medical Education. Accreditation is awarded to the program for one to five years depending on the Program’s educational mission, fulfilled curriculum, clinical experience, rotations and other aspects that relate to the overall experience of the residents.

Horse Whisperer Meets Brain Surgeon

UA Neurosurgeon Teaches Course on Bedside Manners with Horses

An equine equation: what do you get when you put together a horse, some medical students, and a world-renowned neurosurgeon? A medical school class called “Medicine & Horsemanship: An Introduction to Nonverbal Human Interaction at the Bedside.”

For two hours on Friday afternoons, medical students from the University of Arizona College of Medicine meet at a ranch just outside of Tucson to learn horsemanship exercises. Through these exercises, the students also learn something even more valuable — more effective bedside manners.

“Think of it as ‘horse whisperer meets brain surgeon,’” explains Allan J. Hamilton, MD, head of the Department of Surgery, when describing his unique way of teaching medical students how to communicate with their patients.

Dr. Hamilton, a Harvard-trained neurosurgeon specializing in brain and spinal cord tumors, created this course to help young physicians learn how to handle difficult moments such as when a parent needs to be told their child has died, or when a patient has to be told of a bad outcome on a test.

“I am not equating patients with horses,” Dr. Hamilton stresses. “However, horses can teach us a great deal about nonverbal communication that is applicable to our interactions with patients.”

Communication has become an essential component to patient care, Dr. Hamilton says. How health care professionals relate to their patients is as important as the medications they prescribe and the treatments they give.

“Horsemanship requires the understanding of body language and sensitivity,” he says. “There is no endeavor that will more quickly and effectively teach you awareness of your own body language and energy level than learning the principles of working with horses. You learn patience, gentleness and a method of physically relating to patients that is nonverbal, effective and powerful.”

Surgery Makes Headlines

Dr. Allan Hamilton’s medical school course “Medicine & Horsemanship: An Introduction to Nonverbal Human Interaction at the Bedside” has made headlines in local and national news, including:

- American Medical News
- Western Horseman
- Practical Horseman
- The Chronicle of Higher Education
- HealthScout
- Alternative & Complementary Therapies
- Arizona Republic
- Arizona Daily Star
- Tucson Citizen
- Arizona Daily Wildcat
- KUAT-TV “Arizona Illustrated”
- KOLD-TV
- KVOA-TV

Tuba City Indian Medical Center, one of the hospitals within the Indian Health Service, is located on the western part of the Navajo Reservation, approximately 70 miles north of Flagstaff, Arizona. The medical center is a 65-bed regional hospital, serving the needs of 35,000 Hopi, Navajo and Paiute Tribal Members.

By giving to the Department of Surgery at the University of Arizona College of Medicine, you are helping our efforts to recruit and retain key faculty, support promising young research scientists and doctors, and maintain laboratories and lectureships.

Your donation is fully tax-deductible. For more information, please contact us, or mail your tax-deductible contribution to:

UA Department of Surgery
PO Box 245066
Tucson, AZ 85724-5066
(520) 626-7219
Department Welcomes Two Women Surgeons

Research has shown that many women patients would prefer to see a woman surgeon. Yet, according to the American Medical Association, only 17 percent of surgeons in the United States are women. This also means female medical students have few female role models as they consider a career in surgery.

“Drs. Pei Tsau and Christina Kim fulfill a huge need in the University and in the community,” says Allan J. Hamilton, MD, head of the Department of Surgery. “We are excited to have them join the Department of Surgery.”

Pei H. Tsau, MD, assistant professor of clinical surgery, is one of only 20 female cardiothoracic surgeons in the United States. Dr. Tsau completed her undergraduate studies at the UA in 1990, graduating cum laude with a degree in molecular and cellular biology. Four years later, she graduated from the UA College of Medicine. Also at the UA, Dr. Tsau finished her general surgery residency in 2000, including a one-year fellowship in cardiothoracic transplantation and artificial hearts. She completed the UA’s cardiothoracic surgery program for residency training in June 2002.

Dr. Tsau is the co-author of five papers. Her research interests include artificial hearts and immunosuppression, artificial hearts and coagulation, and heparin-coated membranes and coagulations.

Christina J. Kim, MD, joined the department as assistant professor, specializing in surgical oncology. A graduate of the University of Chicago Pritzker School of Medicine, Dr. Kim completed an internship in surgery at the Johns Hopkins Hospital, a research fellowship at the National Cancer Institute, a residency and chief residency at the Medical College of Georgia, and a fellowship in surgical oncology at the H. Lee Moffitt Cancer Center, University of South Florida.

Dr. Kim is the co-author of 15 articles and three book chapters. Her professional memberships include the American College of Surgeons and the Society of Surgical Oncology. Her research focuses on the development of novel immunotherapies and vaccine therapies for pancreatic cancer and melanoma, and the investigation of the molecular mechanisms of tumor progression.

Neurosurgery and Cardiothoracic Surgery Continue to Receive National Recognition

Neurosurgery and neurology at University Medical Center have been ranked 18th in the nation by U.S. News & World Report’s annual guide to “America’s Best Hospitals,” up from last year’s ranking of 37. Heart and Heart Surgery also ranked in the top 50 at number 38. U.S. News, in conjunction with the National Opinion Research Center (NORC), objectively assesses hospital care for 17 specialties at more than 1,800 hospitals nationwide. The publication then ranks the top 50 hospitals in the nation in those 17 specialties. Rankings are based on reputation and various medical data.

The Sections of Neurosurgery and Cardiovascular and Thoracic Surgery in the Department of Surgery have earned their national reputation through a variety of notable accomplishments, world-renowned doctors and cutting-edge research.

Allan J. Hamilton, MD, chief of the Neurosurgery and head of the Department of Surgery, says “I am ecstatic to see UMC and the University of Arizona faculty becoming recognized for excellence in academic and clinical arenas.”
Arizona’s First Disaster Medical Assistance Team

Arizona’s first Disaster Medical Assistance Team (DMAT), AZ-1, is looking for a few good surgeons.

A DMAT is a group of physicians, nurses, medical technicians, other health care professionals and non-medical support staff who volunteer their talents to save lives during a disaster, such as a fire, an earthquake, industrial accident or terrorist attack. The team can be deployed to provide emergency medical care in the first 72 hours of an emergency. DMATs are a community resource available to support local, regional, state and national health care systems.

The Department of Surgery at AHSC is overseeing the development of AZ-1 DMAT with the help of the Pima County Office of Emergency Management and Homeland Security.

“The Arizona Disaster Medical Assistance Team is an independent, non-profit organization of volunteers from every aspect of the health care profession,” says John Porter, MD, commander of AZ-1 DMAT, and section chief of Trauma and Critical Care.

To date, 130 volunteers have joined the team, but more medical doctors are needed.

“AZ-1 is an opportunity for the Pima County medical community to serve their county, their state and their country,” says Dr. Porter.

For more information about joining AZ-1 DMAT, contact Kim Janes, Pima County Health Department, (520) 740-8868, e-mail kjanes@pimahealth.org. More information about the Disaster Medical Assistance Teams can be found on the Web at http://oep.dhhs.gov/ndms.

Shirts 4-Sale

The Department of Surgery is selling shirts to benefit the General Surgery Residency Education Program. Each shirt costs $40; $18 of your payment is tax-deductible. Shirts can be purchased in the Department of Surgery’s Administrative Office, Arizona Health Sciences Center, Room 5408, or by calling Jo Marie Gellerman, Community Affairs, (520) 626-7219.

Modeling the Department of Surgery shirts are surgery residents Joel Funk, MD, (left), Shawn Stevenson, MD, and Kent Stevens, MD.

Faculty Awards & Recognition

Francisco Arabia, MD, associate professor of surgery, Section of Cardiovascular and Thoracic Surgery, will serve on the Donor Network of Arizona (DNA) Board of Directors as the transplant surgeon representative.

Craig V. Comiter, MD, assistant professor and acting chief, Section of Urology, is a dual recipient of the Resident Teaching Award for the Section of Urology and for the Department of Obstetrics & Gynecology.

Allan J. Hamilton, MD, professor and head, Department of Surgery, has been appointed by the White House as Honorary Chairman of the National Business Advisory Council of the Republican Congressional Committee, and named one of America’s Outstanding Professionals, 2002.

Drs. Allan J. Hamilton, Joseph L. Mills, Hugo Villar-Valdes, and Jack C. Copeland were named “Best Doctors” in the July 2002 issue of Tucson Lifestyle.

Ron Heimark, PhD, associate professor and chief, Section of Surgical Research, serves on the scientific review panel of the American Heart Association.

Douglas Larson, PhD, professor of surgery, Section of Cardiovascular & Thoracic Surgery, has been named an honored member of Strathmore’s Who’s Who of Global Decision Makers, 2002-03; he also serves as manuscript editor for the journal Cardiovascular Toxicology (2002) and is national chairman for Continuing Medical Education, American Society of Extracorporeal Technology.

Paul McDonagh, PhD, professor of surgery, was elected president of The Microcirculatory Society for 2002-2003.
Gabriel Gonzales-Portillo, MD, assistant professor, Section of Neurosurgery, was invited to speak about “Spine Trauma” at the Latino American Congress of the Neurological Surgeons held in Lima, Peru, Oct. 26.

Linda C. Meade-Tollin, PhD, research assistant professor, Section of Surgical Research, received the 2002 American Association for Cancer Research Minority Scholar in Cancer Research Travel Award for participation in the AACR Special Conference, “Proteases, Extracellular Matrix, and Cancer.” Her abstract, submitted for a poster presentation, also was selected for an oral presentation during the invited sessions. The conference was held Oct. 9-13 in Hilton Head, S.C.

John Porter, MD, professor and chief, Section of Trauma and Critical Care, has been appointed Vice Chair of the American College of Surgeons (ACS) Arizona Committee on Trauma.

Sanjay Ramakumar, MD, assistant professor, Section of Urology, presented his work on the hemostatic role of “hydrogel” during partial nephrectomy at the World Endourology Congress.

Valerie F. Reyna, PhD, professor of surgery and director, Informatics and Decision Making Laboratory, has been appointed as senior research adviser to the Assistant Secretary for Educational Research and Improvement in the U.S. Department of Education.

Judith Ulreich, PhD, Section of Transplant Surgery, was promoted to research associate professor.

Hugo Villar, MD, professor and chief, Section of Surgical Oncology, and the Department of Surgery’s associate head, was elected to The University Physicians (UPI) Board of Directors for a three-year term. Dr. Villar also was recommended for membership to the International Relations Committee of the American College of Surgeons for a three-year term.

Martin E. Weinand, MD, associate chief, Section of Neurosurgery, has been promoted to professor of surgery.

Alex Westerband, MD, Section of Vascular Surgery, Southern Arizona Veteran’s Administration Medical Center, has been promoted to associate professor of clinical surgery.

Marlys Witte, MD, and Charles Witte, MD, participated in the 5th Biennial International Meeting of the National Lymphedema Network (NLN) in Chicago in late August. They delivered three plenary lectures on imaging lymphatics, angiodyplasia syndromes and advances in genetic understanding of the origin of lymph vascular disorders. The meeting was attended by more than 800 registrants, including physicians, therapists and patients.

The front cover of the September 2002 issue of Developmental Cell, a leading basic science journal, features an article authored by Regeneron Inc. scientists and co-authored by UA collaborators Drs. Marlys and Charles Witte and medical student Cliff Martin, regarding the role of vascular growth factor angioipoietin-2 in lymphatic development.

In October, the Wittes traveled to Recife, Brazil, to deliver a keynote lecture and moderate panels in a special conference on lymphatic vascular disorders, including filariasis, which is endemic to northeastern Brazil. They also discussed the latest advances in genetic screening and control of primary lymphedema.

Mark Your Calendars!

Surgery Grand Rounds

Presents

Lori Arviso Alvord, MD
The first Native American woman surgeon, Dr. Alvord is currently associate dean of Student and Multicultural Affairs at Dartmouth Medical School. In her autobiography "The Scalpel and the Silver Bear" (Bantam, 1999), Dr. Alvord tells the story of her journey from the reservation to become a surgeon and her work to combine Navajo philosophies of healing with western medicine.

Wednesday, Feb. 26, 2003
7-8 a.m.
Arizona Health Sciences Center, Room 5403